# Section 1 Specification

**Reference: NLS160802**

**Title: Supply of a Laser Diffraction Particle Size Analyser System**

**Part A: Technical Specification**

1. **THE SYSTEM**

This contract specifies for the purchase of a single system to be delivered to the NLS Leeds Laboratory (Environment Agency, NLS Leeds Laboratory, Olympia House, Gelderd Lane, Gelderd Road, Leeds LS12 6DD).

* 1. The equipment shall comprise of a laser diffraction particle size analyser suitable for the analysis of environmental solids and liquids. As this equipment is to be used for samples with low solids content including seawater the minimum solid content required for accurate analysis should be specified. The instrument must also be supplied with a large volume wet sample dispersion unit with a minimum volume of 0.5 litres.
  2. The requirements for electrical power and connection will need to be stated.
  3. The design must be of a fail safe nature to prevent instrument damage in the event of power failure.
  4. The space available requires the equipment to be compact in design and capable of bench top installation.
  5. The equipment will have the capacity to handle at least 25 samples per day.

1. **SYSTEM PERFORMANCE** 
   1. This should be suitable for analysis of materials from 20um to 1mm as per CSEMP (Clean Seas Environmental Monitoring Program) Greenbook July 2012 and detailed in the table below.

|  |  |  |  |
| --- | --- | --- | --- |
| **Code** | **Description** | **Interpretation** | **Unit** |
| GSKURT | Grain size kurtosis | Statistical summary | Scale |
| GSMEA | Grain size mean | Statistical summary | mm |
| GSSKEW | Grain size skewness | Statistical summary | Scale |
| GSSORT | Grain size sorting | Statistical summary | Scale |
| GSMED | Grain size median | Statistical summary | mm |
| GSMF>8000 | Grain Size Mass Fraction >8000 | Phi class which may also be used to derive broader classes (% sand, gravel etc) | % |
| GSMF>4000<8000 | Grain Size Mass Fraction >4000<8000 | See above | % |
| GSMF>2000<4000 | Grain Size Mass Fraction >2000<4000 | See above | % |
| GSMF>1000<2000 | Grain Size Mass Fraction >1000<2000 | See above | % |
| GSMF>500<1000 | Grain Size Mass Fraction >500<1000 μm | See above | % |
| GSMF>250<500 | Grain Size Mass Fraction >250<500 μm | See above | % |
| GSMF>125<250 | Grain Size Mass Fraction >125<250 μm | See above | % |
| GSMF>63<125 | Grain Size Mass Fraction >63<125 μm | See above | % |
| GSMF63 | Grain Size Mass Fraction <63 μm | See above | % |
| GSMF20 | Grain Size Mass Fraction <20 μm | Used for chemistry interpretation | % |

* 1. The system must also be able to analyse for all the following determinands:

|  |  |  |
| --- | --- | --- |
| SOLID SAMLPLES |  | LIQUID SAMPLES |
| Kurtosis |  | Kurtosis |
| Particle Diameter Mean |  | Particle Diameter Mean |
| Graphic Skewness |  | Graphic Skewness |
| Sorting Co-efficient |  | Sorting Co-efficient |
| Particle Diam Median |  | Particle Diam Median |
| Grain Size Inclusive Mean |  | GSF 500-999 mic |
| Grain Size Inclusive Kurtosis |  | GSF 250-499 mic |
| GSF >63000 mic |  | GSF 125-249 mic |
| GSF 45000-63000 mic |  | GSF 63-125 mic |
| GSF31500-45000 mic |  | GSF <63 mic |
| GSF 22400-31500 mic |  | GSF <20 mic |
| GSF 16000-22400 mic |  | GSF 32-62.9 mic |
| GSF 11200-16000 mic |  | GSF 15.6-31.99 mic |
| GSF 8000-11200 mic |  | GSF 7.8-15.59 mic |
| GSF 5600-8000 mic |  | GSF 3.9-7.79 mic |
| GSF 4000-5600 mic |  | GSF <3.9 mic |
| GSF2800-4000 mic |  | Grain Size Inclusive Mean |
| GSF 2000-2800 mic |  | Grain Size Inclusive Kurtosis |
| GSF 1400-2000 mic |  | GSF 0 to 1 Phi |
| GSF 1000-1400 mic |  | GSF 1 to 2 Phi |
| GSF <1000 mic |  | GSF 2 to 3 Phi |
| Particle Size Report |  | GSF 3 to 4 Phi |
| Raw Data Report |  | GSF 4 to 5 Phi |
| GSF >1000 mic |  | GSF 5 to 6 Phi |
| GSF 707-1000 mic |  | GSF 6 to 7 Phi |
| GSF 500-707 mic |  | GSF 7 to 8 Phi |
| GSF 354-500 mic |  | GSF 8 to 9 Phi |
| GSF 250-354 mic |  | GSF 9 to 10 Phi |
| GSF 177-250 mic |  | GSF >10 Phi |
| GSF 125-177 mic |  |  |
| GSF 88.4-125 mic |  |  |
| GSF 62.5-88.4 mic |  |  |
| GSF 44.2-62.5 mic |  |  |
| GSF 31.3-44.2 mic |  |  |
| GSF 22.1-31.3 mic |  |  |
| GSF 31.3-44.2 mic |  |  |
| GSF 22.1-31.3 mic |  |  |
| GSF 15.6-22.1 mic |  |  |
| GSF 11.1-15.6 mic |  |  |
| GSF 7.81-11.1 mic |  |  |
| GSF 5.52-7.81 mic |  |  |
| GSF 3.91-5.52 mic |  |  |
| GSF 2.76-3.91 mic |  |  |
| GSF 1.95-2.76 mic |  |  |
| GSF 1.38-1.95 mic |  |  |
| GSF 0.98-1.38 mic |  |  |
| GSF <0.98 mic |  |  |

* 1. The system must meet the requirements of the National Marine Biology Analytical Quality Control (NMBAQC) ring-test proficiency exercise and NMBAQC Guide to Best Practice for Particle Size Analysis.

1. **SOFTWARE, DATA HANDLING AND CONTROL**

The instrument must be provided with the appropriate computer hardware, software and printer, fully programmed for operation. The system provided must meet the following criteria:-

* 1. Standard software to be pre-loaded onto the computer must include an operating system (please state which will be provided) in addition to the instrument operating software and any other software required for normal operation.
  2. Full multitasking software, giving full control of the whole system.
  3. Facilities must be provided for full data acquisition, storage and manipulation.
  4. The system must have the ability to be linked to a LIMS system and details of any file input and output structures must be included.
  5. The system will output the data in graphical format in addition to numerical information.

1. **SERVICE AND MAINTENANCE REPAIR**

The supplier must be able to provide ‘on site’ support for preventative maintenance and repair visits. ‘Return to supplier’ options will not be acceptable.

The supplier should be able to provide on-site preventative maintenance service and repair package options for use by the Laboratory, should it choose to do so.

The instrument and all components will be supplied with a minimum 12 month warranty.

1. **ADDITIONAL REQUIRED INFORMATION**

Please provide the following information with you quotation response

* A list of all consumable parts necessary for operation of the system
* Full information on the service and maintenance options you can provide and their annual costs.
* Details of all instrument installation requirements including electrical and gas supplies and any exhaust extraction requirements
* Please provide an expected delivery time from receipt of order.
* Full specification of computer hardware and printer including operating system.
* Availability of technical advice for method development and application.
* Details of your user training at installation and post installation.
* Contact details of two organisations that have experience in using the proposed equipment. This information may be used by the laboratory to seek references

**Part B: Special Conditions**

1. **Introduction :**
   1. The following conditions of contract relate to the installation of the equipment and subsequent post-sales services and are supplementary to the standard conditions of

contract for goods.

* 1. In addition to the interpretations listed in the standard conditions for Goods the following applies :-

1.2.1 “Acceptance Date” – means the date on which the Agency gives written notice of acceptance in accordance with Condition 5.

1.2.2 “Installation Site” – means the place where the Goods are to be installed in the Agency’s premises.

1. **Specification**
   1. The Goods shall be of the qualities and kinds described and equal in respects to the descriptions, specifications, patterns and Contractor's samples, which form part of the Contract or are otherwise relevant for the purpose of the Contract. Except in so far as may otherwise be indicated by such descriptions, specifications, patterns or Contractor's samples, the Goods shall be strictly in compliance with the latest relevant International or British Standards where such exist.
   2. All goods which customarily bear any mark, tab, brand, label or other device indicating place or origin, inspection by any Government or other body or standard of quality must be delivered with all the said marks, tabs, brands, labels or other devices intact.
2. **Packaging**
   1. The following details shall be shown with every delivery unless otherwise specified in the Contract:

Description of the Goods & quantity in package

Any special directions for storage/unpacking, which shall include the appropriate Health & Safety information

Expiry date of contents (where applicable)

Name of manufacturer and any other relevant information

* 1. The Contractor shall collect without charge any returnable containers (including pallets) within twenty-one days of the date of the relevant delivery note, unless otherwise instructed by the Agency named in the Contract. Empty containers not so removed may be returned by the Agency at the Contractor's expense or otherwise disposed of at the Agency's discretion. Charged containers shall be credited in full by the Contractor upon collection or return.
  2. All packaging shall be removed by the contractor and recycled/reused where possible. Disposal of waste must comply with all relevant legislation.

1. **Delivery and Installation**
   1. All equipment detailed herein must be delivered to designated site(s), installed and prepared for acceptance by the Agency on or before date specified.
   2. A delivery note clearly marked with the Agency’s order number shall accompany each delivery.
   3. The Goods shall be delivered free of charge to the Agency to the locations shown on the order and by the agreed delivery date. The Agency will make available access to the site as reasonably required by the supplier for the delivery and installation of the equipment.
2. **Tests and Acceptance**
   1. The following conditions supplement paragraph 12 (Rejection of Goods) of the Standard Conditions of Contract and identify that the acceptance of the instrument(s) need to satisfy the Agency’s nominated representative at post-commissioning stages.
   2. On completion of installation the supplier shall verify full operation of the system to demonstrate that the performance meets the requirements of the specification to the satisfaction of the Agency's nominated representative.
   3. The giving of the above notices by the Agency shall not in any way prejudice its rights if it is otherwise discovered later that the Goods do not meet the specification or otherwise fail to comply with the terms of the Contract.
3. **Price and Payment**
   1. The Contract Price shall be "net", that is, after deduction of all agreed discounts and fixed for the period of the contract. It shall include the cost of all royalties, licence fees, WEEE responsibilities, packaging, packing materials, addressing, labelling, loading, delivery to the addresses named in the Contract or orders, installation, commissioning and be in accordance with the amount set out in financial cost statement. All other costs, charges, fees and expenses of whatever kind for or arising out of or in connection with the provision of the Goods and Services shall be paid by the Contractor unless otherwise agreed in writing by the Agency
   2. Any early settlement or multiple purchase discounts shall be shown separately in the Contract.
   3. The payment details for the support and maintenance after the warranty period to be agreed
4. **Environmental Consideration**
   1. The following Conditions supplement paragraph 26 (Environment) of the Standard Conditions of Contract and are specific for Contractors supplying chemicals or any other hazardous goods or equipment where such products are used.
   2. The Contractor should ensure that all hazardous goods supplied to the Agency must be marked with the International Danger Symbol(s) and display the name of the material in English. All documentation must include a declaration of the hazard and the name of the material in English. Goods must be accompanied by emergency information in English in the form of written instructions, labels or markings. The Contractor shall ensure that all information held by, or reasonably available to him, regarding any potential hazard known, or believed to exist in the transport, handling or use of the Goods supplied is notified to the Agency.
   3. The Contractor shall notify the Agency of any Goods supplied for which there is a potential to cause environmental damage through their use and provide information to the Agency on the steps they are taking to minimise such damage.
   4. The Contractor shall ensure that he complies with all relevant legislation relating to the "Duty of Care and Registration of carriers" as detailed in the Environmental Protection Act 1990.
5. **Training and Operating Manuals**
   1. The Contractor shall supply free of charge installation drawings and manuals containing instructions for the use and maintenance of the Goods.
   2. The Supplier must provide full documentation and operational manuals (including software), for the operation and maintenance of the equipment.
6. **Maintenance and Spares**
   1. The Supplier must detail the routine operator maintenance required to keep the system performing to specification.
   2. The Environment Agency makes no commitment to purchase maintenance cover and/or consumables under this contract and reserves the right to source form other parties to ensure value for money is achieved and shall not in any way prejudice its rights under the agreed contract terms.